

2/Developmental Milestones in Motor and Language Development

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All normal children, whatever their native language, go through the same stages of language acquisition in nearly the same order, although not all progress at the same rate. All normal children also move through the same stages of motor development—though again at different rates. However, the relationship between language acquisition and sensorimotor development is not clear. Some researchers believe that some level of sensorimotor knowledge must be present in order for language acquisition to proceed; others argue that it is cortical maturation itself which is the essential prerequisite both for the development of language and for sensorimotor development. The issue is whether language is an autonomous cognitive system or whether it is only one way of many in which development of general cognitive ability is manifested. A further question is whether and to what extent children possess an innate capacity specifically for language acquisition. The following chart juxtaposes the stages of motor and language development typically reached by children from twelve weeks through four years of age.

At the completion of:	Motor Development	Vocalization and Language
12 weeks	Supports head when in prone position; weight is on elbows; hands mostly open; no grasp reflex	Markedly less crying than at 8 weeks; when talked to and nodded at, smiles, followed by squealing-gurgling sounds usually called <i>cooing</i> , which is vowel-like in character and pitch-modulated; sustains cooing for 15-20 seconds

At the completion of:	Motor Development	Vocalization and Language
16 weeks	Plays with a rattle placed in his hands (by shaking it and staring at it); head self-supported; tonic neck reflex subsiding	Responds to human sounds more definitely; turns head; eyes seem to search for speaker; occasionally some chuckling sounds
20 weeks	Sits with props	The vowel-like cooing sounds begin to be interspersed with more consonantal sounds; labial fricatives, spirants, and nasals are common; acoustically, all vocalizations are very different from the sounds of the mature language of the environment
6 months	Sitting; bends forward and uses hands for support; can bear weight when put into standing position, but cannot yet stand with holding on; reaching; unilateral; grasp: no thumb apposition yet; releases cube when given another	Cooing changing into babbling resembling one-syllable utterances; neither vowels nor consonants have very fixed recurrences; most common utterances sound somewhat like <i>ma</i> , <i>mu</i> , <i>da</i> , or <i>di</i>
8 months	Stands holding on; grasps with thumb apposition; picks up pellet with thumb and finger tips	Reduplication (or more continuous repetitions) becomes frequent; intonation patterns become distinct; utterances can signal emphasis and emotions
10 months	Creeps efficiently; takes side-steps, holding on; pulls to standing position	Vocalizations are mixed with sound-play such as gurgling or bubble-blowing; appears to wish to imitate sounds, but the imitations are never quite successful; beginning to differentiate between words heard by making differential adjustment
12 months	Walks when held by one hand; walks on feet and hands—knees in air; mouthing of objects almost stopped; seats self on floor	Identical sound sequences are replicated with higher relative frequency of occurrence and words (<i>mamma</i> or <i>dada</i>) are emerging; definite signs of understanding some words and simple commands (show me your eyes)
18 months	Grasp, prehension, and release fully developed; gait stiff, propulsive, and precipitated; sits on child's chair with only fair aim; creeps downstairs backward; has difficulty building tower of 3 cubes	Has a definite repertoire of words—more than three, but less than fifty; still much babbling but now of several syllables with intricate intonation pattern; no attempt at communicating information and no frustration for not being understood; words may include items such as <i>thank you</i>

At the completion of:	Motor Development	Vocalization and Language
		or <i>come here</i> , but there is little ability to join any of the lexical items into spontaneous two-item phrases; understanding is progressing rapidly
24 months	Runs, but falls in sudden turns; can quickly alternate between sitting and stance; walks stairs up or down, one foot forward only	Vocabulary of more than 50 items (some children seem to be able to name everything in environment); begins spontaneously to join vocabulary items into two-word phrases; all phrases appear to be own creations; definite increase in communicative behavior and interest in language
30 months	Jumps up into air with both feet; stands on one foot for about two seconds; takes few steps on tip-toe; jumps from chair; good hand and finger coordination; can move digits independently; manipulation of objects much improved; builds tower of six cubes	Fastest increase in vocabulary with many new additions every day; no babbling at all; utterances have communicative intent; frustrated if not understood by adults; utterances consist of at least two words, many have three or even five words; sentences and phrases have characteristic child grammar, that is, they are rarely verbatim repetitions of an adult utterance; intelligibility is not very good yet, though there is great variation among children; seems to understand everything that is said to him
3 years	Tiptoes three yards; runs smoothly with acceleration and deceleration; negotiates sharp and fast curves without difficulty; walks stairs by alternating feet; jumps 12 inches; can operate tricycle	Vocabulary of some 1000 words; about 80% of utterances are intelligible even to strangers; grammatical complexity of utterances is roughly that of colloquial adult language, although mistakes still occur
4 years	Jumps over rope; hops on right foot; catches ball in arms; walks line	Language is well-established; deviations from adult norm tend to be more in style than in grammar

2. Jean Piaget has argued that children acquire meanings as an extension of sensorimotor intelligence and that the development of vocabulary categories, for example, depends upon motor development (things can be "graspable" or "suckable"). Thus, abilities in different areas (e.g., motor skills and language) that appear at the same age should be similar because they are based on the same cognitive knowledge. Can you support or refute this argument on the basis of Lenneberg's table, or do you need additional information? If you believe that you need additional information, describe the kind(s) of data that you would want to have.

FOR DISCUSSION AND REVIEW

1. Study Lenneberg's table showing typical stages of motor and language development for young children. Do motor development and language development seem to progress at similar rates—that is, do children develop more rapidly in one area than in the other?